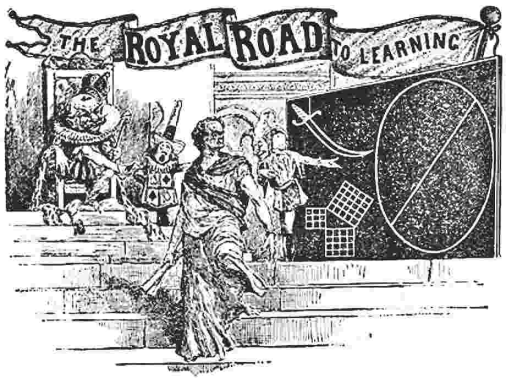
Problem F: The Royal Road to Learning (II)

Beppo continues with his mathematics lessons for King Ptolemy: "I'd like to bring your attention now to what my distinguished predecessor has made famous as his 47th proposition, which proves that the square described on the long side of a right–angled triangle, termed the hypotenuse, is equal to the sum of the squares of the other two sides."

"I will ask the author of the 47th proposition to tell how many rails of equal length it would require to enclose a right–angled triangular field if one of the three sides was 47 rails long. . . "



To the left — a model for the 47th proposition

We will say that a triangle is a *Beppo triangle* if it's a right triangle with sides of length **a**, **b** and **c**, where a, b and c are positive integers such that $a < b < c < 10^6$, $a^2 + b^2 = c^2$ and the greatest common divisor of all three numbers is 1.

Given a length **L**, identify all Beppo triangles that have L as one of its sides.

Input

Input starts with a positive integer **T**, that denotes the number of test cases.

Each test case is given in a single line that contains an integer **L**.

$T \leq 5000$; $1 \leq L < 10^6$

Output

For each test case, print the case number followed in the same line by the number of Beppo triangles with a side of length L.

Then print the values of a, b and c of each triangle, one per line. Print the triangles in ascending order (sort them first by a, then by b and finally by c).

Sample Input	Output for Sample Input
4 47 6 5 635	Case 1: 1 47 1104 1105 Case 2: 0 Case 3: 2 3 4 5 5 12 13 Case 4: 2 635 8052 8077 635 201612 201613